The Builder.

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SATURDAY, NOVEMBER 13, 1847.

VARIOUS matters constructional have fallen under our notice during the week, and may be usefully placed before our readers. On Monday, for example, we assisted in a series of experiments at Mr. Cubitt's establishment, Thames Bank, on the strength of bricks (conducted by Mr. Dines, an able assistant of Mr. Cubitt), the results of which were exceedingly striking. The difference of strength in bricks, as our readers will perceive when we put before them the details of the experiments, is extraordinary, and the necessity of attending to certain circumstances in their formation and use, is very apparent. The power was applied by means of the hydraulic press, and the metal surfaces, between which the bricks were crushed, were filed smooth and made perfectly parallel,—an important point.

A good place brick (if we may use such a contradictory expression,—a *place* brick always meaning a *bad* brick), faced with plaster to make an even bed, yielded to 11 tons, and was crushed by 16½ tons. In other words, (as we shall use the same terms in recording all the experiments,) a disruption of the brick was observable when 11 tons' weight was on it; and after 16½ tons it offered no further resistance, but fell to pieces, and the index of the ram receded.

A similar brick to the last, also faced with plaster, yielded to 16 tons and was crushed by 22½ tons.

Two common stock (?) bricks, differing from the latter merely in colour, yielded to 10 tons, and were crushed, one by 16 tons and the other by 16½ tons.

A good stock yielded to 30, and fell to pieces under 34 tons.

A superior washed stock yielded to 36 tons, and was crushed by 44½ tons.

A pressed and kiln-burnt stock, made for superior purposes, ground on both faces to get a true bed, *bore a pressure of* SIXTY TONS (the limit of the power of the ram used), and was taken out sound and uninjured!! A similar brick not ground, but faced with plaster, resisted the same pressure without crushing, but was slightly broken round the edges.

A bat of the same description, with a somewhat uneven bed, not faced, was crushed by 27 tons.

It is unnecessary to say how much depends on the evenness of the bed: when this is not the case, the brick is broken up in detail. The hollow formed in the underside of bricks, for the reception of mortar, necessarily lessens their resisting power. All the bricks of which we have spoken were of Mr. Cubitt's own make. An ordinary place brick from another field yielded to 3 tons, and was crushed by 9 tons; and a second of the same description yielded like the first to 3 tons, and was crushed by 6 tons.

Such experiments as these open the eyes most usefully, and lead always to advantage. A brick is a brick to some persons,—that is, it always means the same thing: yet here we see it in one case untouched by *sixty* tons' weight, and in another falling to powder under the pressure of *six*.

We may have the opportunity of recording, on a future occasion, the resisting power of other materials: in the meantime we may give the result of similar experiments with this end in view, on three pieces of Caen stone the size of a brick, 9×4½×3. The first, which had the bed parallel with the end and at right angles with the pressing surfaces, was cracked by thirty tons (not in the line of bed), and crushed by thirty-nine tons. The second block, with the bed parallel with the vertical face, and at right angles to the pressing surfaces, stood forty-two tons before it crushed; and the third, with the bed parallel with the pressing surfaces, was slightly cracked by forty tons, but stood fifty tons and a half before it crushed!

Mr. Cubitt has recently instituted a series of experiments on the usefulness, or otherwise, of wrought-iron tension bars, employed in the manner in which they frequently are, to assist wood and cast-iron beams. The result shews their worthlessness, as our readers shall have the opportunity of seeing shortly.

Great want of thought, if not ignorance, appears to us to have been shewn in the selection of *cast-iron* as the material for the *beacon on the Goodwin Sands*, recently destroyed, and in the mode of construction. The beacon consisted of a central cast-iron tube 2 feet 6 in. in diameter, put together in 10 and 20 feet lengths, sunk 33 feet into the sand, by means of Dr. Potte's very ingenious and important application of atmospheric pressure, and surmounted by a cage or ball, at a height of about 50 feet from the sand level. Around the central column were four other cast-iron tubes 15 inches in diameter, slightly tied together and braced to the main tube. It was unwisely placed on the most exposed part of this fatal shoal, and so badly constructed that its fate might have been predicted.

To use so brittle a material as cast-iron for any part of the beacon above the sand, was most unwise; and then, to make the chance of failure greater, the joints were of very indifferent character, the end of one tube being merely set into the other, and secured, if we are rightly informed, by six three-quarter pins.

By implication, the failure of this substructure may prove injurious to the patentee of the process by means of which the tubes were driven, in an incredibly short space of time, through the sand, into which, to drive a pointed rod of 3 inches' diameter one inch, when it was 13 feet in the sand, forty-six blows of a monkey, weighing 1 cwt., were required. Such an impression as this we should much regret, as the invention is an important one, and is in no way touched by the destruction of the beacon. A small spar breakwater, properly constructed on a foundation of tubes so driven into the sand, would long brave the wind and waves, and might be kept in repair with facility.

Dr. Potte's process, as most of our readers probably know, is very simple: the lower extremity of the hollow tube or pile, which may be of any shape, is open; the upper end is fitted with a cover; the air is extracted from the tube by pumps, or a partial vacuum is otherwise formed by the condensation of steam, &c., when the sand or shingle flows into it; and the tube, by its own gravity and the pressure of the atmosphere upon its upper surface, descends. The force with which it is driven down is not to be calculated by the area of its upper end alone, on which the atmosphere acts: the removal of all obstacles below, driven into the tube by the atmosphere to fill the vacuum ("Nature's abhorrence," as the old philosophers called it), must also be taken into account. The effect with even a small pump is quite extraordinary. For the foundations of a bridge for the Chester and Holyhead Railway, over a branch of the sea, nineteen piles which were required for the central pier defied the efforts of the ordinary drivers. By means of the process in question, however, they were all easily forced in at the rate of 6 feet in two minutes and a half;—the pile-drivers shaking their heads during the operation, and saying it was time they gave over business!

REVISION OF THE METROPOLITAN BUILDINGS ACT.

A COMMITTEE, privately nominated by Lord Morpeth, to consider the more glaring evils of the Buildings Act, has had several meetings. It consists of Mr. Hosking, Mr. Poynter, and Mr. Shaw, the official referees; Mr. Pownall and Mr. Aitchison, on the part of the district surveyors; and Mr. Biers and Mr. Piper, on the part of the builders.

It is to be regretted that the public are not represented,—owners of property, and the profession generally, should have had a voice in the recommendations which will go to his lordship and be made the basis, probably, of a legislative measure. We have all confidence in the gentlemen composing the committee, but each of them, it must be apparent, has an interest to serve apart from that of the public.

Those who have suggestions to offer may, with propriety, address the committee through any member of it.

ON MOSAICS, AS APPLIED TO ARCHITECTURAL DECORATION.*

SHOULD the memorable sentiment originated (I believe) by Victor Hugo, be but true, "que l'histoire de chaque grand pays est inscrite sur ses monuments," it then surely behoves us, if we would read the history of our own and other countries aright, to draw deeply from those inexhaustible fountains of information, and to recollect, that while the purpose and general nature of a nation's monuments best indicate the leading qualities and relative importance of the kingdom, the relics of its minor arts and embellishments define most clearly the peculiar social position and condition of its people.

If we enter at all generally on this examination, we shall find, that each successive phase of civilization has possessed an accompanying cycle of arts, varying in artificial character with the conventionalities incident to a state of elaborate development; and we may thus learn, in some degree, to classify the arts of embellishment, and appropriate each properly to that state of human culture with which it may seem most in harmony.

The history of the art on which it is our pleasing task to enter, briefly, this evening, affords a striking illustration of the truth of this proposition. We trace mosaic, as an eminently luxurious and elaborate embellishment, from its apparent origin in the hotbed of Persian effeminacy, through its comparatively developed state among the Greeks, to its fructification and universal dissemination through the courtly elegance and abandoned luxury of imperial Rome; and recognise the fact, that it was only in connection with this most artificial condition of being that it ever assumed the varied character and universality of employment it then and there obtained.

Introduced in the days of Scylla, about 85 years before Christ, the first purpose to which it was applied was the decoration of the Temple of Fortune at Prænestè, the present Palestrina; we there find, to this very day (corroborating the account Pliny has given to us), that most interesting pavement generally known as the "Palestrina mosaic," in which a curious peculiarity is noticeable clearly indicative of the Grecian origin of the art, namely, that the inscriptions, illustrating the

* Read at the Institute of Architects, by Mr. Matthew Digby Wyatt, on the 1st inst., as mentioned last week.